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**Case Report**

# Urticaria after intracervical dinoprostone gel: challenges of allergy testing in pregnancy

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## ABSTRACT

Hypersensitivity reactions to prostaglandins are rare but can pose significant risks during pregnancy. True type 1 hypersensitivity reactions are IgE-mediated, while pseudo-allergic reactions mimic these responses without involving immune pathways, making clinical differentiation challenging. Dinoprostone is commonly used for cervical ripening, with well-documented side effects; however, severe allergic reactions remain rare. We report a case of a 25-year-old primigravida induced at 39 weeks of gestation with 0.5 mg intracervical dinoprostone gel for oligohydramnios. Three hours post-administration, she developed widespread maculopapular rashes over her arms, legs, and abdomen, accompanied by itching. There were no signs of facial swelling, respiratory distress, or gastrointestinal symptoms, though mild hypotension and tachycardia were noted. The reaction was managed with intravenous chlorpheniramine, leading to partial resolution. An emergency caesarean section was later performed due to non-reassuring fetal heart rate and thick meconium. Urticaria completely resolved within 3 days with oral levocetirizine. This presentation suggested a possible pseudo-allergic reaction to dinoprostone, as patient lacked systemic features typical of IgE-mediated anaphylaxis. Although skin testing could confirm hypersensitivity, it carries considerable risk in pregnancy, including potential anaphylaxis, infection, and diagnostic uncertainties due to altered immune responses and test variability. This case highlights the importance of clinical vigilance in diagnosing and managing hypersensitivity reactions in pregnancy, where confirmatory testing may not be feasible. Close monitoring after dinoprostone administration is essential to ensure prompt identification and management of adverse reactions for maternal and fetal safety.

**Keywords:** Urticaria, Cervical ripening, Hypersensitivity

## INTRODUCTION

A 25-year-old primigravida with no significant medical history was admitted for labor induction at 39 weeks of gestation due to oligohydramnios. Her antenatal period was uneventful. Laboratory findings on admission included a hemoglobin level of 11.3 g/dl, a total leucocyte count of 15,300/µl, and a platelet count of 2.1 lacs/µl. She had no history of allergic conditions such as asthma or allergic conjunctivitis.

Cervical ripening was initiated with 0.5 mg intracervical dinoprostone gel due to a poor Bishop's score. Approximately three hours later, the patient developed generalized maculopapular rashes on her arms, legs, and abdomen, accompanied by itching (Figure 1). There was no associated facial swelling, respiratory distress, or hypotension, though her blood pressure dropped slightly from 118/78 mmHg to 100/60 mmHg, and her heart rate increased to 100 bpm. Chlorpheniramine 10 mg IV was administered, leading to partial resolution of the symptoms. Given the lack of exposure to other potential allergens or drugs and no intravenous fluids at the time of the reaction, dinoprostone was considered the probable cause. However, the absence of confirmatory skin or in-vitro testing leaves room for alternative explanations,

including pseudo-allergic reactions or other environmental triggers. An emergency caesarean section was performed due to non-reassuring fetal heart rate and thick meconium. Postoperatively, the patient's urticaria resolved completely over three days with oral Levocetirizine, and she was discharged in stable condition.

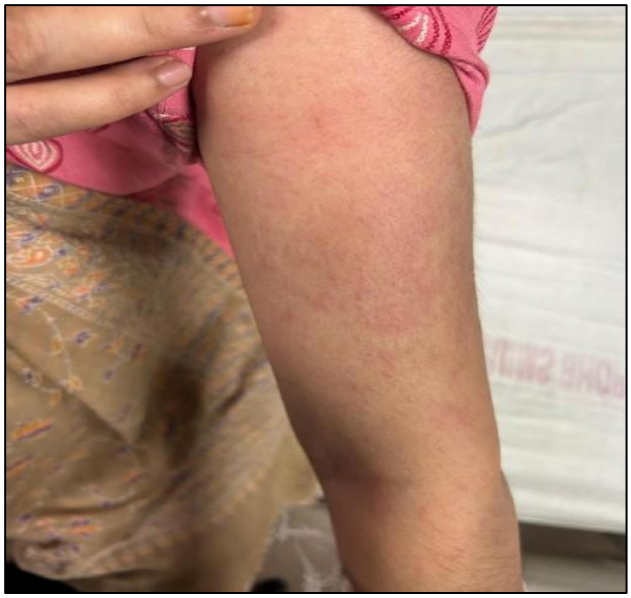

**Figure 1: Image of rashes on the left arm three hours after intracervical administration of dienoprostone gel.**

## DISCUSSION

Anaphylaxis is a severe, potentially life-threatening type 1 hypersensitivity reaction that occurs within minutes to hours of allergen exposure. It is IgE-mediated, diagnosed clinically through symptoms such as airway obstruction, urticaria, itching, angioedema, wheezing, hypotension, syncope, and gastrointestinal disturbances. Allergen exposure triggers mast cell and basophil degranulation via IgE cross-linking, releasing mediators like histamine and cytokines. This leads to increased vascular permeability, smooth muscle contraction, and systemic effects ranging from mild pruritus to severe bronchospasm, hypotension, and hypoxia.[1]

Dinoprostone plays a key role in cervical ripening by inducing an inflammatory response, stimulating interleukin-8 production, and promoting cervical remodeling. It is widely used in obstetrics as an intracervical gel, vaginal gel, or controlled-release insert. While generally well-tolerated, side effects such as vomiting, diarrhea, abdominal cramps, dizziness, headache, and fever are not uncommon, usually transient, and self-limiting.[2,3] In rare instances, severe allergic or anaphylactoid reactions can occur. The literature reports only a few cases of severe anaphylaxis following dinoprostone use, presenting with symptoms such as urticaria, laryngeal edema, hypotension, and uterine hyperstimulation.[4,5]

In the present case, the patient developed widespread urticaria and mild hypotension without respiratory distress or systemic compromise. The absence of severe features such as bronchospasm or angioedema, coupled with the patient's rapid partial response to antihistamines, suggests a possible pseudo-allergic reaction rather than a classic IgE-mediated hypersensitivity reaction. Pseudo-allergic reactions are non-IgE-mediated and occur through direct mast cell degranulation or alternative pathways, leading to similar clinical manifestations. Distinguishing between true allergic and pseudo-allergic reactions is challenging, particularly in pregnancy, where altered immune responses may make reactions more unpredictable.[6]

Allergy skin testing or in-vitro testing could have helped confirm an IgE-mediated hypersensitivity reaction. However, performing such tests in pregnant women is fraught with challenges. The most significant concern is safety, as skin testing can potentially trigger anaphylaxis, posing serious risks to both mother and fetus. Additionally, pregnant women have altered immune function, which may increase susceptibility to infections, making the procedure a potential hazard. Interpretation of skin tests during pregnancy also presents difficulties. There is a risk of false-positive or false-negative results, leading to diagnostic uncertainty.[6,7] Variability in test methods, lack of standardized allergen extracts for certain drugs, and the need for expert interpretation further complicate the process. Due to these risks and limitations, skin testing was not performed in this case, and management was based on clinical assessment. It is also essential to recognize that genetic predispositions may play a role in drug hypersensitivity reactions in pregnant women with no prior exposure or history of atopy. Although rare, such reactions highlight the importance of vigilance in monitoring patients who receive prostaglandins for cervical ripening.

## CONCLUSION

Obstetricians should maintain a high index of suspicion and be prepared to manage potential hypersensitivity reactions following dinoprostone administration to ensure the safety of both mother and fetus. While allergic and pseudo-allergic reactions to dinoprostone are uncommon, they can pose significant challenges in diagnosis and management during pregnancy. Differentiating between type 1 hypersensitivity and pseudo-allergic reactions is often difficult without confirmatory allergy skin testing, which may not be safe in pregnancy.

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